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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,615

03/18/2004

Hibiki Itoh

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5877

21706 7590 02/28/2007
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EXAMINER

WILLIAMS, SHERMANDA L

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,615	ITOH, HIBIKI	
	Examiner	Art Unit	
	Shermanda L. Williams	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/27/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/27/06 has been entered.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 9/27/04 was considered by the examiner.

Response to Amendment

Amendment After Non-Final filed 11/27/2006 is acknowledged. Claims 15-18 have been added. Claims 1-3, 5, 7, 11, 12 have been amended. Claim 13 has been canceled.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claim 1-11, and 15-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1, the limitation "second electrode layer consisting of a second porous substrate and formed on said electrolyte film" is not in the original disclosure. Claims depending on claims rejected under 35 U.S.C. 112, first paragraph are also rejected for the same reason.

5. Claims 1-11, 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "...and formed to permit removal of said seal portion..." is unclear. What does the applicant means by "formed to permit"? What actions or measurement can be used to make to the determination that the seal portion is "formed to permit"? It is unclear to the Examiner if the structure of claim 1 requires that a segment of the seal portion be removed to form the gas inflow and outflow openings or if the structure of claim 1 requires that the seal portion remain completely in tact, having no gas inflow or outflow openings formed. For the purpose of prosecution, the Examiner has understood claim 1 to require that the seal portion to be removed forming the gas inflow or outflow openings.

6. Claims depending on claims rejected under 35 U.S.C. 112, second paragraph are also rejected for the same reason.

Double Patenting

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7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. Claims 1-11, 14, 15 and 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S.

Patent No. 6,740,442. Although the conflicting claims are not identical, they are not

patentably distinct from each other because in both claim a solid oxide fuel cell that employs the electrolyte material as a seal for the side and corner portion of the cell.

Claims 1-12, 14, 15 and 18 of the current application are obvious variants of Claims 1-10 of U. S. Patent No. 6,740,442.

10. Claim 12 rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 6,740,442. This is a double patenting rejection.

Claim Rejections - 35 USC § 102(b)

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-8, 11-12, 14, 17 are rejected under 35 USC 102(b) as being unpatentable over Poeppel et al. (US 4,476,196). Poeppel et al. discloses a solid oxide side fuel cell having monolithic cross flow core and manifold comprising the following:

an insulated core with thin layers of an electrolyte and intermediate film (or separator) material sandwiched between layers of porous anode and cathode electrodes respectively; See Claim 1 of Poeppel et al., Column 4 Lines 52-61, Column 6 Line 20 to Column 7 Line 6, Column 8 Line 8 to Column 9 Line 5; The separator material in the current application (second sentence of paragraph 43) is disclosed as a strontium doped lanthanum chromite based oxide such as

lanthanum chromite. The intermediate film material in the reference is lanthanum chromite (See Column 3 Line 17).

a core that has passageways for gas flow paths that are laid out in a crosswise or orthogonal pattern and has transverse manifolds for delivery and removal of reactant material;

with conductive web walls or conductive spacers between the individual cells and in the parallel and perpendicular direction respectively depending if it is an anode or cathode web wall See Column 7 Line 45 to Column 8 Line 7;

an electrolyte and separator material formed via the tape cast method (wetted process) for adhering to the anode and cathode electrode. See Column 8 Line 8-17;

a ceramic paste is used to pack annular space to seal the structure and prevent gas leakage, See Column 6 Lines 52-56;

Conductors or conductive jointing material that link the individual fuel cells See Column 7 Line 30;

a thin layer of electrolyte material **44** can be folded down or up on the side or end portions **64** of the anode and cathode. See Figure 3, See Column 8 Line 64. The folded material encloses the side or end portions to separate the fuel and oxidant gases on opposite sides of the porous electrode material (Column 8 Line 67 to Column 9 Line 4). The passageways for the fuel are formed with only anode electrode material. The passageways for the oxidant are formed with only the cathode electrode material (Column 6 Lines 57-66).

14. Poeppel et al. discloses that the fuel flow and the oxidant flow are transverse or orthogonal with respect to each other (Column 6 Lines 43-47).

The reference teaches the use of anode, cathode, electrolyte, and separator materials that are matched as closely as possible to one another with respect to each coefficient of thermal expansion. See Column 9 Lines 25-40.

15. It is noted that claim that the limitation of claim 1, "...formed to permit removal of said seal portion from two opposing areas of said side surfaces to define an inlet and an outlet for on of a fuel gas and air supplied to the cell..." is a product-by-process limitation. Also, claim 4 is a product-by-process claim. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Poeppel et al. discloses the same or an obvious variant of the applicant's electrolyte and separator films. The applicant's process has not been given patentable weight in this claim.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 15, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poeppel et al. (US 4,476, 196) in view of Ketcham et al. (US. 6,045,935). Poeppel et al. discloses a solid oxide fuel cell having monolithic cross flow core and manifolds as discussed above and incorporated herein. Poeppel et al. discloses all the limitations of claims 15 except that the air flow path and the fuel flow path are parallel and that the reactants flow co-current or counter-current with respect to each other. Ketcham et al. teaches (see Figure 2), the air flow path and the fuel flow path (35, 36) are arranged parallel and the reactants flow in a co-current arrangement with respect to each other inside the perforated ceramic tube 38 (Figure 3; col. 5 lines 49-63). In Figure 4, the air flow path and the fuel flow path (82, 84) are arranged parallel and the reactants flow in a counter-current arrangement through the center ceramic tube 38 (col. 6 lines 40-42; Figure 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the flow path of arrangement of Poeppel et al. to have the reactants flow path arranged parallel with respect to each other and the reactants flowing in a co-current or counter-current design such as taught by Ketcham et al. It has been held by the courts that the rearrangement of parts requires only ordinary skill in the art. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)

With respect to claims 9 and 18, Poeppel et al. discloses a solid oxide fuel cell having monolithic cross flow core and manifolds. Poeppel et al. discloses all the limitations of claim 9 as discussed above and incorporated herein except that the

manifold structures or plates attached to the side surfaces of the laminated body are formed of a glass-ceramic (a type of ceramic). Ketcham et al. teaches a solid oxide fuel cell. Ketcham et al. also teaches that glass-ceramic is used for manifold in solid oxide fuel cells because the glass-ceramic closely matches the expansion properties of the electrolyte (see col. 3, line 65 to col. 4, line 14).

17. Poeppel et al. discloses that the manifolds on opposite sides of the fuel cell are connected via one or the other of the fuel or air passageways (Column 6 Lines 20-35).

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use glass-ceramic as the material of construction for the manifolds of Poeppel et al. as taught by Ketcham et al. because the glass ceramic material closely matches the expansion properties of the electrolyte in the solid oxide fuel cell stack. This will alleviate the loss of contact between the manifold and the surface of the laminate body thereby maintaining a proper seal.

19. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poeppel et al. (US 4,476, 196) in view of Ketcham et al. (US. 6,045,935) and as evidenced by Morgan Advanced Ceramics Datasheet for Glass Ceramic. The disclosures of Poeppel et al. and Ketcham et al. as discussed above are incorporated herein. Neither Poeppel et al. nor Ketcham et al. explicitly teach that the glass ceramic manifolds are free-cutting glass ceramic. The Morgan Advanced Ceramics Datasheet for Glass Ceramic states that one of the main advantages of glass ceramic is that it can be machined quickly and economically into complex shapes and precision parts using ordinary metal working tools. See www.morganadvancedceramics.com/materias/gc.htm The free-cutting

property of the glass-ceramic is an inherent property. See MPEP 2112. The claiming of an inherent property is not patentable. See *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir.1995) and *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Response to Arguments

20. Applicant's arguments filed 11/27/2006 have been fully considered but they are not persuasive. The Applicant's arguments that the entire fuel electrode or air electrode of Poeppel et al. (US 4,476, 196) does not form a fuel flow path or an air flow path is not persuasive. Poeppel et al. teaches that the webs or walls of the cathode and anode are comprised solely of the respective cathode or anode material. Therefore the passages in the anode and cathode are entirely formed by the respective active material (col. 7 lines 62-67).

21. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the ability to choose the side surface through which the fuel or air shall flow after the completion of fabrication) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

22. Particularly, the Applicant's arguments regarding the process by which the electrolyte seal is formed is unpersuasive due to the fact that the Applicant has not claimed the process of making the seal portion nor the instant during fabrication when

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the air/fuel inlet and out are fabricated. Poeppel et al. teaches a thin layer of electrolyte material can be folded down or up on the end or side portions of the anode and cathode. See Figure 3, See Column 8 Line 64.

23. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. The cited reduction of production steps as grounds for overcoming the prior art considers the process by which a product is made. It has been held that the method of forming a device is not germane to the issue of patentability of the device itself. The product of the current application and that of the prior art appear to be the same. The Applicant has not provided any evidence to support otherwise.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shermanda L. Williams whose telephone number is (571) 272-8915. The examiner can normally be reached on Mon.-Thurs. 7 AM - 4:30 PM and alternating Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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